AMENDMENT TO THE CLAIMS

IN THE CLAIMS:

Please add claims 20-31 as follows. A status of all the claims is provided below.

1. (Previously presented) A method of casting in a casting machine including a casting die, in which a feeder head is provided between a metal inlet and a cavity and in which heat insulating of the feeder head is greater than that of the cavity so as to make cooling rate of the feeder head lower than that of the cavity, said method comprising the steps of:

pouring molten metal into the cavity;

reacting the molten metal with a deoxidizing compound in the cavity so as to deoxidize an oxide film formed on a surface of the molten metal; and

supplementing the molten metal in the feeder head to the cavity when the molten metal in the cavity is solidified and shrinked.

2. (Original) The method according to claim 1,

wherein the cooling rate of the cavity is 500 °C/min or more, and

the cooling rate of the feeder head is less than 500 °C/min..

3. (Original) The method according to claim 1,

wherein the molten metal is aluminum or aluminum alloy,

the cooling rate of the molten metal in the cavity is adjusted to make average clearance between dendrites of solidified aluminum or aluminum alloy in the cavity less than 25 μm, and

the cooling rate of the molten metal in the feeder head is adjusted to make average clearance between dendrites of solidified aluminum or aluminum alloy in the cavity 25 μm or more.

4. (Previously presented) The method according to claim 1,

wherein an inner face of the feeder head is coated with heat insulating lubricant, and

an inner face of the cavity is free of heat insulating lubricant.

5. (Original) The method according to claim 1,

wherein the heat insulating of a material of the casting die, which forms the feeder head, is greater than that of a material of the casting die, which forms the cavity.

6. (Original) The method according to claim 1,

wherein temperature of an inner face of the cavity is less than 300 °C while casting.

7. (Original) The method according to claim 1,

wherein an inner face of the cavity is compulsory cooled by cooling means.

8. (Original) The method according to claim 1,

wherein an adapter of the casting die is detachably attached to a cavity part of the casting die.

9. (Original) The method according to claim 1,

wherein an adapter of the casting die includes: the feeder head; a first path for introducing the molten metal to the feeder head; and a second path for introducing a material of the deoxidizing compound to the cavity so as to form the deoxidizing compound in the cavity.

10. (Original) The method according to claim 1,

wherein the molten metal is aluminum or aluminum alloy, and

the deoxidizing compound is magnesium nitride compound, which is formed by reacting a magnesium gas on a nitrogen gas.

11.-19. (Previously canceled)

20. (New) A method of casting in a casting machine including a casting die, said method comprising the steps of:

pouring molten metal into a cavity of the casting die by pouring molten metal through a feeder head;

setting a cooling rate of the molten metal filled in an uncoated area of the cavity at about 500°C/min. or more and a cooling rate of the molten metal poured into the feeder head portion at about 500°C/min. or less to provide an average dendrite size to increase fluidity and toughness;

reacting the molten metal with a deoxidizing compound in the cavity so as to deoxidize an oxide film formed on a surface of the molten metal;

solidifying the molten metal filled in the cavity; and

supplementing the molten metal in the feeder head to the cavity when the molten metal in the cavity is solidified and shrinked.

21. (New) The method according to claim 20, wherein:

an inner wall surface of the cavity is free from the heat insulating treatment; and

coating the feeder head with a heat insulating lubricant.

22. (New)) The method according to claim 21, wherein the deoxidizing compound is formed in the cavity.

23. (New) The method according to claim 20, further comprising:

introducing a first substance and carrier agent into another path in the feeder head to enter into the cavity;

introducing a second substance directly into the cavity,

wherein the first substance and the second substance form the deoxidizing compound on walls of the cavity prior to the pouring step.

24. (New) A method according to claim 23, wherein the carrier agent and first substance are mixed in a heated receptacle and the carrier agent transfers the first substance from the heated receptacle to the cavity.

25. (New) The method according to claim 20, wherein:

the molten metal is aluminum or an aluminum alloy, and

a magnesium-nitrogen compound which is obtained by allowing a magnesium gas and a nitrogen gas as raw materials to be reacted with each other in the cavity is used as the deoxidizing compound.

26. (New) The method according to claim 20, wherein in the solidifying step, a difference of a cooling rate between the molten metal filled in the feeder head and the molten metal filled in the cavity is set to be about 200^0C/min or more.

27. (New) The method according to claim 20, further comprising preventing a blocking of the deoxidizing compound by arranging a molten metal-introducing passage that introduces the molten metal into the feeder head and an introducing passage that introduces a raw material of the deoxidizing compound into the cavity.

28. (New) The method according to claim 20, wherein the cooling rate of the molten metal filled in the cavity at about 500°C /min. or more and the cooling rate of the molten metal poured into the feeder head at less than 500°C /min fully secures the difference of solidification time of the molten metal between the molten metal filled in the feeder head and the molten metal filled in the cavity.

29. (New) A casting method, comprising the steps of:

pouring molten metal into a cavity of the a molding die;

reducing an oxide film formed on a surface of the molten metal by allowing the molten metal and a substance of the deoxidizing compound from a heated receptacle to flow into contact in the cavity;

reacting the molten metal with the deoxidizing compound, a substance of which is carried separately in the cavity, so as to deoxidize an oxide film formed on a surface of the molten metal;

solidifying the molten metal filled in the cavity; and

supplementing the molten metal in the feeder head to the cavity when the molten metal in the cavity is solidified and shrinked.

30. (New) A casting method, comprising the steps of:

pouring molten metal into a cavity of the a molding die;

forming a deoxidizing compound in the cavity by:

introducing a first substance in the cavity which acts to provide the cavity in a non oxidizing atmosphere; and

introducing a second substance in the cavity, separate, from the first substance, to mix with the first substance to form the deoxidizing compound;

reacting the molten metal with the deoxidizing compound in the cavity so as to deoxidize an oxide film formed on a surface of the molten metal;

solidifying the molten metal filled in the cavity; and

supplementing the molten metal in the feeder head to the cavity when the molten metal in the cavity is solidified and shrinked.

31. (New) A casting method, comprising the steps of:

pouring molten metal into a cavity of the a molding die;

providing a carrier agent into a heated receptacle which holds a substance of a deoxidizing compound,

introducing the substance into the cavity by using the carrier agent to form the deoxidizing compound in the cavity;

reducing an oxide film formed on a surface of the molten metal by allowing the molten metal and the deoxidizing compound from a heated receptacle to flow into contact in the cavity;

reacting the molten metal with the deoxidizing compound in the cavity so as to deoxidize an oxide film formed on a surface of the molten metal;

solidifying the molten metal filled in the cavity; and

supplementing the molten metal in the feeder head to the cavity when the molten metal in the cavity is solidified and shrinked.